The value of these contributions is unfortunately impaired by the small size and diagrammatic character of the illustrations.—L. W. SHARP.

Morphology of Tetraclinis.—SAXTON[24] has investigated *Tetraclinis articulata*, the "gum sandarach" tree of Morocco and Algeria. He has given an unusually detailed account of microsporogenesis. The mature pollen grain is uninucleate, and approximately three months elapse between pollination and fertilization; while it is 12 months from the first appearance of the strobili to the complete maturity of the seeds. The development of both gametophytes resembles that of other *Cupressus* forms. Wall-formation in the proembryo occurs in passing from the four-nucleate to the eight-nucleate stage, the mature embryo being somewhat variable in the number and arrangement of the cells. More than one tier of cells takes part in suspensor formation. In the mature embryos three, four, and five cotyledons were found. One of the interesting cytological features is the segregation of the chromosomes into two groups in the prophase of the first division of the fertilized egg. This is taken to be an evidence of the continued individuality of male and female chromosomes. The chromosome numbers were found to be 12 and 24. SAXTON is inclined to believe that the *Callitris* group was derived from the *Cupressus* group through some plant resembling *Tetraclinis*. He traces a geographic line of evolution from northern to southern Africa, and thence by means of former antarctic land connection to Australia. This would make *Widdringtonia* the most primitive of the *Callitris* forms.—J. M. C.

The absorption of water by aerial organs.—It is now pretty generally believed that the absorption of water by the aerial organs of vascular plants is rarely a thing of consequence outside of the Bromeliaceae, although it has been known for a long time that flaccid leaves immersed in water recover their turgescence. Experiments made by various investigators have shown that the cell sap of *Salicornia* and other salt marsh plants has an osmotic pressure considerably above that of sea water. Hence the question arose with Miss HALKET as to the possibility of such plants absorbing water when immersed at high tide. It was found that the aerial organs of *Salicornia* plants can absorb water from a 3 per cent solution of sodium chloride, and a larger amount from distilled water.[25] As might be expected, the amount absorbed is greatly increased if the plants are allowed to transpire freely before immersion, without being able to absorb water through the roots. Experiments made on non-halophytic plants under similar conditions resulted in a loss of water rather than in absorption, hence it is concluded that the absorption noted in the salt marsh plants

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[24] SAXTON, W. T., Contributions to the life-history of *Tetraclinis articulata* Masters, with some notes on the phylogeny of the Cupressoïdeae and Calltroïdeae. Ann. Botany **27**:577–605. *figs. 9. pls. 44–46.* 1913.

[25] HALKET, ANN C., Some experiments on absorption by the aerial parts of certain salt-marsh plants. New Phytol. **10**:121–139. 1911.

is due to the high osmotic pressure. It is suggested that in these plants absorption by aerial organs (involving both sea water and atmospheric water) may in nature supplement root absorption, although the latter doubtless is the more important.—H. C. COWLES.

Xerophytic fern prothallia.—The very delicate character of fern prothallia in general and their usual development under humid conditions have made it difficult to account for the establishment of various ferns in dry, rocky situations. Some light has recently been shed upon the subject by experimental cultures of the prothallia of *Camptosorus rhizophyllus* by PICKETT.[26] Exposed to conditions of desiccation arranged to simulate as far as possible those of dry limestone ledges under conditions of natural drought, the prothallia showed complete recovery after 34 days, and 25 per cent recovery after 55 days. Under rather more rigorous conditions, only 50 per cent of the prothallia died after 38 days' exposure to conditions of drought that killed all the prothallia of *Onoclea Struthiopteris* in 48 hours; while under the most rigorous aridity in a sulphuric acid desiccator a small proportion of the prothallia survived 4 days' exposure. All these tests go to prove that the drought-resisting character of the prothallia of *Camptosorus* must be a very important factor in the establishment of this fern in its characteristically xerophytic habitats.—GEO. D. FULLER.

Rhodophyceae of the Indian Ocean.—Mrs. WEBER VAN BOSSE[27] has reported upon a collection of Rhodophyceae made in 1905 on the Percy Sladen Trust Expedition to the Indian Ocean. The geographical distribution shows a great resemblance between the algal flora of the Indian Ocean and that of the Malay Archipelago, as well as that of the east coast of Africa. A table shows the locality, bottom, depth, and distribution of each of the 79 species collected, among which there are 18 new species, and a new genus (*Pseudenosiphonia*) of Rhodemelaceae.—J. M. C.

Plant phyla.—BESSEY[28] has revised his *Synopsis of plant phyla*, making many changes in the arrangement of the orders and families. He recognizes 14 phyla, and gives the latest approximate enumeration of the known species of plants as 233,614. These species are distributed among the current large groups as follows: Thallophytes 79,450, of which the Ascomycetes and Basidiomycetes include 64,000; Bryophytes 16,600; Pteridophytes 4,524; Gymnosperms 540; Angiosperms 132,500.—J. M. C.

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[26] PICKETT, F. L., Resistance of the prothallia of *Camptosorus rhizophyllus* to desiccation. Bull. Torr. Bot. Club. **40**:641–645. 1913.

[27] WEBER VAN BOSSE, Mrs. A., Marine algae, Rhodophyceae, of the "Sealark" expedition, collected by Mr. J. STANLEY GARDINER. Trans. Linn. Soc. London Bot. II. **8**:105–142. *pls. 12–14*. 1913.

[28] BESSEY, CHARLES E., Revisions of some plant phyla. Univ. Studies **14**[1]: 73. 1914. Lincoln, Nebraska.